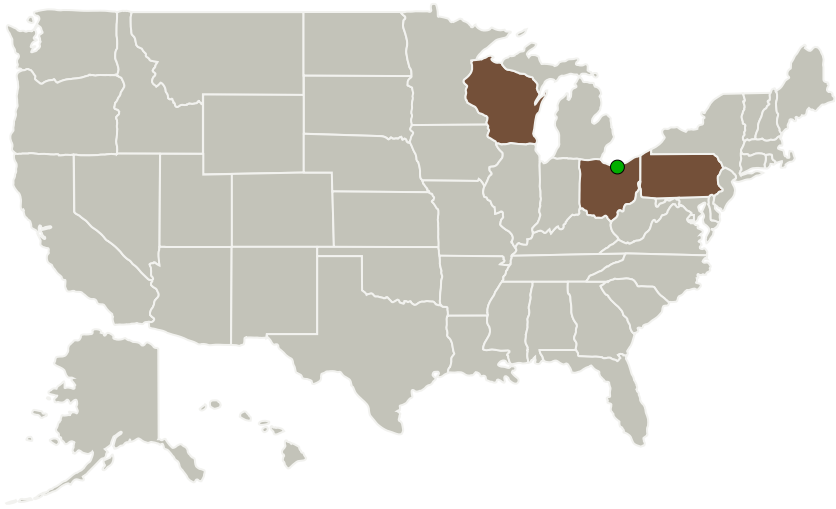
High Performance Nanolauncher, Phase I

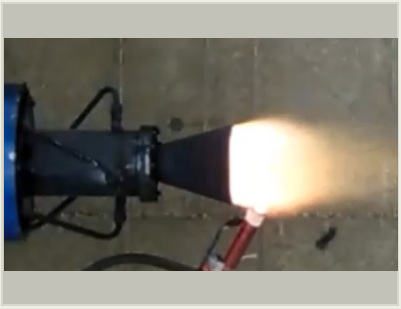
Completed Technology Project (2014 - 2014)

Project Introduction

The proposed Low Cost Nanolauncher (LCN) is an upper stage using a new, inexpensive propulsion system. The Phase I program will combine several technologies with a simple design strategy to produce a flight-weight propulsion system that is easy to fabricate and operate. Self pressurizing propellants will minimize complexity of the propulsion system and vortex cold-wall technology will be used to simplify the combustion chamber. An inexpensive, light weight nozzle is being developed by Pennsylvania State University using carbon phenolics. Commercially available components will be use where possible to further minimize costs. The Phase I LNC will demonstrate these technologies through ground testing of a flight-like propulsion system. A small launch vehicle second stage will be designed based on the experimental performance characteristics. This work will form the basis for a family of vehicle stages from smaller upper stages to a main booster stage. The low cost technologies and design methods employed in the LNC will reduce the cost of launching nanosatellites into orbit.

Primary U.S. Work Locations and Key Partners





High Performance Nanolauncher Project Image

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Organizations Performing Work	Role	Type	Location
Sierra Nevada Corporation(SNC)	Lead Organization	Industry Women-Owned Small Business (WOSB)	Sparks, Nevada
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Ohio	Pennsylvania
Wisconsin	

Project Transitions

June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137671)*

Images

Project Image
High Performance Nanolauncher Project Image
(https://techport.nasa.gov/image/127119)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Sierra Nevada Corporation (SNC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

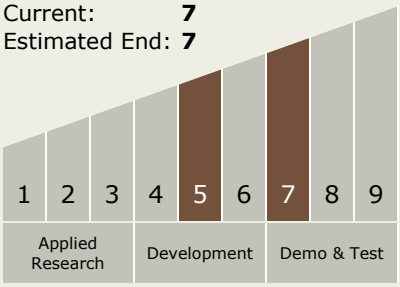
Carlos Torrez

Principal Investigator:

Jonathan Mccabe

Technology Maturity (TRL)

Start: **5**
Current: **7**
Estimated End: **7**



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Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.3 Cryogenic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System